

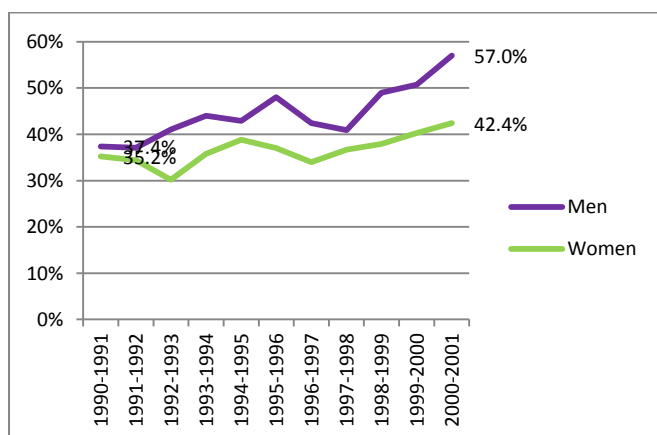
## The work-related well-being of male and female Ph.D. students: how important is the mentoring style of their supervisor?

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### INTRODUCTION

The number of Ph.D.'s produced annually in Flanders has increased sharply over the past twenty year. While in the academic year 1995-1996 598 Ph.D.'s graduated, by 2009-2010 this number had more than doubled to 1385 (Flemish Ministry for Education and Training, various years). This was made possible only by an enormous investment by the government to provide the necessary funding for a rapidly increasing number of doctoral students. Nevertheless, many Ph.D. students never complete their doctorate or only do so after a long time. Of the cohort that started as junior researchers at a Flemish university in 2000-2001 only 50.5% obtained their Ph.D. within eight years, which was already a substantial improvement over the cohort starting in 1990-1991, of which only 36.5% did so (Groenvynck et al., 2011, 62).



(Bron: Groenvynck et al. 2011, 67)

**Figure 1: Evolution of the success rates of men and women for the cohorts between 1990-1991 and 2000-2001**

Clear gender differences can be observed regarding the success rates of doctoral candidates. Figure 1 shows that among the cohort 2000-2001 57.0% of the men completed their doctorate within eight years, only 42.4% of women did.

Recognizing factors that affect the completion of the doctorate within a reasonable time and how men and women are differently affected by them, may increase the efficiency of resource allocation and result in a further increase in the number of doctorates produced annually.

One factor that was largely ignored in past research but may contribute importantly to the success or failure of a Ph.D. project is the work-related well-being of Ph.D. students. Work-related well-being, and especially job satisfaction was found to be of great importance for the job performance and retention of employees in other occupational groups (Griffeth et al., 2000, Harrison et al., 2006).

### HOW TO INFLUENCE WORK-RELATED WELL-BEING?

The work-related well-being of employees is influenced by various aspects of the work environment, like psychosocial working conditions (Hausser et al., 2010; van der Doef and Maes, 1998). Psychosocial working conditions can be described by three dimensions: job demands, job control and social support. Job demands are defined as the psychological stressors in the work environment (e.g. workload, time pressure). Job control or decision latitude refers to the employee's control over tasks and the way they are executed. Social support refers to the emotional support employees get from their supervisor and/or co-workers. According to the job

Demands-Control-Support (DCS) model, employees experiencing high job demands in combination with low co-worker and supervisor support and low job control are most vulnerable for poor health and poor well-being (Karasek et al., 1998).

Another important element of the work environment is the mentoring or leadership style of the supervisor. Leadership style plays an important role in defining the work environment in which employees function and can experience well-being. Various types of mentoring style have generally been found to influence employees' stress and well-being (Skakon et al., 2010). However, previous research has mainly focussed on the association between mentoring style and well-being (Kuoppala et al., 2008) without explaining how leadership style influences well-being and thereby neglecting that working conditions may affect this relationship.

## THE SITUATION OF FLEMISH PH.D. STUDENTS

In the Flemish system almost all doctoral students are university employees. This double status as both student and employee has implications for the relationship with their supervisor. The supervising faculty member is not only their academic supervisor, but their administrative one as well.

## PSYCHOSOCIAL WORKING CONDITIONS

The working conditions of doctoral students can be described using the three dimensions of the DCS-model. As an academic career is often more a vocation than a job, Ph.D. students are expected not to consider their work as a nine to five activity, but to be intrinsically motivated to achieve their doctorate. This "informal" expectation frequently results in a high workload and long working hours. These high job demands might however be compensated by the job control students experience. Ph.D. candidates are supposed to conduct research autonomously. This should give them the occasion to work on a more independent basis and take their own decisions to learn new things and develop special abilities. In situations characterized by substantial job control and considerable uncertainty, social support of both co-workers and supervisor is essential. If one can rely on others for advice, feed-back or support, the doctoral student will be better able to overcome any obstacles he or she may encounter during the doctoral project. Students that lack such support are left to their own device and may get discouraged with their research.

## LEADERSHIP STYLE OF THE PH.D. SUPERVISOR

Ph.D. supervisors are expected to provide the time, expertise and support to help and stimulate Ph.D. students to gain knowledge and develop research skills

and attitudes, needed to successfully complete their doctoral project. Meanwhile supervisors also play an important role in the assessment of the quality of the research and the work of the doctoral student (Mainhard et al., 2009). Ph.D. supervisors have to combine the dual role of 'guide' and 'assessor' (Murphy et al., 2007). This may reflect in their mentoring style, which is a combination of two dimensions, namely support and structure. A supervisor may be supportive and encouraging for example by discussing the research of his/her Ph.D. students on a regular basis and by helping them with the preparation of publications (**supportive mentoring style**) but at the same time he or she may also be authoritative and directive for example by providing clear direction and by continuously monitoring the Ph.D. students' progress (**authoritative mentoring style**).

## LEADERSHIP STYLE AND PSYCHOSOCIAL WORK CONDITIONS

The mentoring or leadership style of the supervisor can affect all three aspects of the DCS model. As the supervisor often is responsible for the funding of the doctoral student's project and accountable to the funding agency, doctoral researchers often have less autonomy regarding their doctoral research and there is more pressure to perform as their failure reflects on their supervisor. This can result in higher job demands imposed on the student by one's supervisor in combination with lower decision latitude. The co-worker support may largely depend on the size of the research group and the social relations with other doctoral students. The supervisor may influence the social relations among his/her doctoral students for example by encouraging them to get to know each other on a more informal manner outside the work environment. Alternatively, the supervisor can create a competitive work climate, were doctoral students are more each other's competitors than colleagues.

## GENDER DIFFERENCES?

Several studies have suggested that female doctoral students may face greater difficulties during their Ph.D. period than men and are less satisfied with their overall study experience (Kurtz-Costes et al., 2006; Ulku-Steiner et al., 2000), which in turn may negatively affect their work-related well-being. Women in academia are frequently confronted with stereotypical images on the part of faculty with traditional attitudes toward gender roles, who have higher expectations for men and who believe that men are more willing than women to devote themselves more than full time to their academic work because women are assumed to face more constraints due to family responsibilities (Kurtz-Costes et al., 2006; Van den Brink, 2011). At the same time, women are

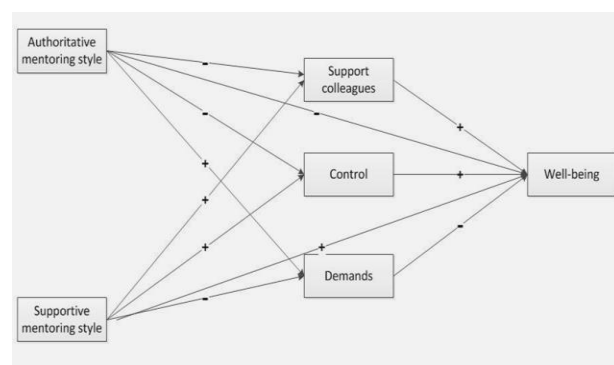
more concerned than men about how they can cope with both their professional and familial roles (Kurtz-Costes et al., 2006).

The Ph.D. supervisor can play an important role in helping to facilitate their Ph.D. students' work-life balance but can instead also increase the tension between both spheres depending upon their attitudes and concern for students' well-being. The overall supportiveness of the supervisor has been found to be an important factor influencing for both female and male Ph.D. students with regard to their stress levels and career commitment (Kurtz-Costes et al., 2006).

## DATA

How is the work-related well-being of Ph.D. students affected by a supportive and an authoritative mentoring style? Is the effect of mentoring style on Ph.D. student's well-being mediated by conditions such as job demands, level of job control and co-worker support? Are the effects of a supportive and an authoritative mentoring style different for men and women?

To find an answer to these questions, multi-method structural equation analysis was performed on data obtained from the Survey of Junior Researchers (SJR) (ECOOM-UGent 2008). The study sample consists of 1887 Ph.D. students or junior researchers who had the ambition to obtain a Ph.D. and who were enrolled in a Ph.D. program at one of the four participating Flemish universities. Men and women were almost equally represented with 955 ( 50.6%) male and 932 (49.4%) female Ph.D. students, respectively.



**Figure 2: Research model**

Figure 2 shows the proposed model with the expected relationships between both types of mentoring style, psychosocial working conditions and work-related well-being.

## RESULTS

### PSYCHOSOCIAL WORKING CONDITIONS AND WELL-BEING

Job control and social support from colleagues have a positive impact on both male and female Ph.D. students' work-related well-being, while job demands have a negative effect on well-being among male Ph.D. students only.

### EFFECTS OF MENTORING STYLE

A supportive mentoring style is found to have a positive effect on job control among both men and women, and also has a positive effect on social support from colleagues for men only. An authoritative mentoring style, to the contrary, negatively affects social support from colleagues and job control and positively affects job demands among both male and female Ph.D. students.

For both men and women, an authoritative mentoring style negatively affects work-related well-being, whereas a supportive mentoring style has a positive effect on their well-being.

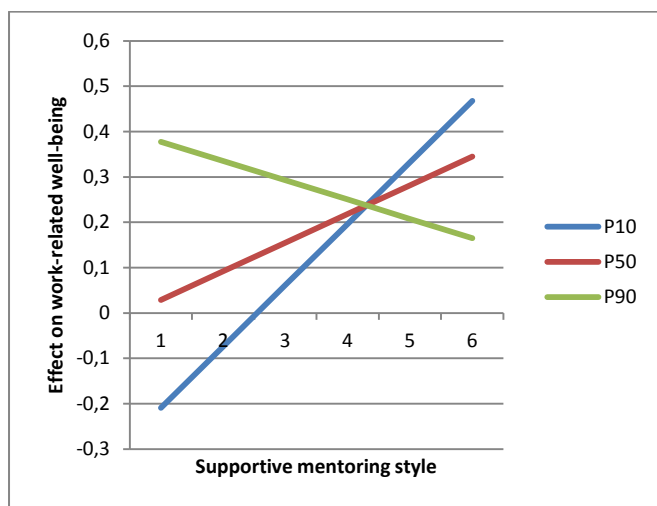
**Table 1: Unstandardized estimates of the direct, indirect and total effects of mentoring style (MS) and psychosocial work characteristics on well-being.**

Well-being	Authoritative MS		Supportive MS	
	Women	Men	Women	Men
	Effect	%	Effect	%
Total	-0.132		-0.145	
Direct	-0.063	48%	-0.063	44%
Indirect	-0.068	52%	-0.082	56%

Both types of mentoring style directly and indirectly affect students' work-related well-being. The indirect effect is partially mediated by students' psychosocial working conditions. For women, job control, in particular, is an important mediator, while for men both job control and social support from colleagues matter. The negative effects of an authoritative mentoring style are considerably stronger than the positive effects of a supportive style, and the overall strength of the effects is quite similar for men and women.

### INTERACTION BETWEEN BOTH MENTORING STYLES

For female Ph.D. students, the interaction between both mentoring styles has a negative effect on their work-related well-being. Figure 3 shows that at low levels of an authoritative mentoring style, the work-related well-being of female Ph.D. students increases with increasing levels of a supportive mentoring style. In contrast, at high levels of an authoritative mentoring style, the positive effect of higher levels of a supportive mentoring style on well-being disappears and even turns negative.



**Figure 3: The effects of a supportive mentoring style on the work-related well-being of female Ph.D. students by a low (10th percentile), a median (50th percentile) and a high (90th percentile) authoritative mentoring style**

## CONCLUSIONS

Both for male and female Ph.D. students, a supportive mentoring style has the most beneficial effect on their psychosocial working conditions and work-related well-being. However, when both types of mentoring style are combined, the positive effect of the supervisor's support on the work-related well-being of female students disappears when the supervisor is also authoritative and directive. These findings indicate that female Ph.D. students who perceive their supervisor as both highly supportive and highly authoritative lose the benefits of having a supportive supervisor.

Although the obtained results are not completely similar for men and women, no substantial differences exist in the mechanisms of how an authoritative and a supportive mentoring style influence male and female Ph.D. students' work-related well-being. Women also did not differ from men with regard to psychosocial working conditions or experienced mentoring style. One possible reason for the absence of substantial gender differences in both mechanisms and exposure might be the fact that for most doctoral students, balancing work and private life is not yet an important issue giving their young age and the absence of childcare responsibilities.

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